CLASS SPECIFICATION

TITLE	GRADE	EEO-4	CODE
MANAGER I, REGISTERED PROFESSIONAL ENGINEER	**43***	**A**	**6.224**

OPTIONS: Department of Transportation

A. Maintenance Division
B. Materials and Testing Division
C. Operations Analysis Division
D. Road Design Division
E. Safety Engineering Division
F. Structural Design Division
G. Districts

Under general direction, manage the operations and staff of one or more sections within a major division, or manage the operations and staff of a secondary division, or function as a construction projects manager within a district; coordinate project activities; provide technical expertise to staff in the accurate analysis and evaluation of engineering problems and adaptation of effective solutions.

Positions at the Manager I level perform professional engineering functions requiring analysis in the application of recognized concepts and principles to difficult problems and analysis in the application of advanced principles and abstract concepts in the development of unique solutions to difficult problems that impact recommendations and the development of new policies, procedures and long and short range organizational goals. Activities consist of duties that result in decisions and provide control of outcome of decisions. Positions at this level deal with internal and external management levels as well as executives, officials and regulatory representatives generally to solve problems involving conflict or controversy requiring interpretation/application of policy or to negotiate solutions within policy guidelines.

ALL OPTIONS

Perform supervisory functions to include assigning and reviewing work; reviewing and approving time sheets and travel requests; conducting employee evaluations; determining training needs and implementing training activities and forecasting staffing needs.

Represent the department at public hearings and informational meetings and respond to questions and complaints regarding department policies and projects.

Assist in establishing the division's/district's budgetary requirements by providing staff input and projecting future needs.

Serve as an expert witness in court proceedings and claims against the department to provide oral and written testimony and to answer specific questions.

Perform related duties as assigned.

MAINTENANCE DIVISION

Administer the activities involved in the Maintenance Management System by reviewing system input, data processing and output records for effectiveness of procedures; investigating unusual trends or exceptions from

*** Reflects a 2-grade, special salary adjustment authorized by the 2001 Legislature to improve recruitment and retention.**

MAINTENANCE DIVISION (cont'd)

norms; authorizing or recommending system improvements; maintaining an updated manual of instructions and coordinating annual system updates to include reviewing updated unit cost and productivity data.

Oversee the Maintenance Training Program by conducting semiannual reviews of the program to determine training solutions and preparing reports on the status of maintenance training and training programs development; conducting an annual audit of the Equipment Operator Certification Program; developing a bi-annual maintenance academy; coordinating the Maintenance Office Training Program by appraising training developed by coordinators, scheduling training sessions, and ensuring training sessions provide maintenance personnel with a clear understanding of the Maintenance Management System.

Perform general headquarters maintenance office functions by overseeing the statewide equipment program; conducting research into new or improved equipment, materials or procedures; and making recommendations based on research findings; participating in bid development for statewide materials purchases; supervising the preparation of responses to questionnaires from other state maintenance offices, State agencies, federal agencies, colleges and universities, technical publications and the general public.

MATERIALS AND TESTING DIVISION

Manage the operations and staff of a branch within the division.

Bituminous Branch: Review and approve cement and lime treated mix designs and bituminous mix designs; approve material source for the production of bituminous aggregates and roadbed aggregates; represent the division on the Restoration, Rehabilitation and Construction Committee which establishes statewide projects, location and length of projects, evaluates type and causes of distress and establishes most cost effective corrective actions for restoration, rehabilitation or reconstruction; and implements research associated with bituminous, cement or lime mix designs, additives and asphalt to provide for a more durable and longer lasting pavement.

Geotechnical Branch: Develop policies, methods and routines for field and lab testing, report writing and construction procedures to produce solutions and make recommendations for construction purposes; evaluate and assess the need for replacement of equipment; coordinate the activities of the section with those of other divisions and agencies; prepare consultant agreements, interview for consultants, administer consultant agreements, and review and evaluate consultants' progress.

Pavement Design Branch: Review and approve the design of structural sections for flexible and rigid pavements; review and approve material sources for needed materials to be used on statewide projects; evaluate in-place pavement sections to establish corrective actions and design treatments necessary for rehabilitation projects; determine pavement investigations used in the development of pavement designs; initiate agreement between research organizations, consultants and testing service vendors for the continuation of ongoing studies; and implement research associated with pavement investigation and pavement design.

Structural/Chemical Branch: Analyze and approve recommendations made by staff for specifications changes on specific projects; originate standard specifications for inclusion in future projects; negotiate with staff and other division/sections to reach agreement on specification changes; and develop specifications for purchase of testing equipment to replace or augment existing equipment.

All Branches: Provide solutions to problems by determining the corrective measures necessary to repair existing roadway conditions; determine research projects to study unusual or difficult problems in order to check untried or new methods of construction; and analyze materials' properties and their effect on associated materials in conjunction with new product development.

MATERIALS AND TESTING DIVISION (cont'd)

All Branches (cont'd)
Determine specifications for new products and upgrade current specifications to ensure proper use of available materials; and develop specifications for the purchase of new or upgraded equipment for the continuation of field investigations.

OPERATIONS ANALYSIS DIVISION

Manage the Pavement Management System by directing the development of programs and procedures to develop candidate projects and priorities for the State Highway Preservation Program; directing research on pavement rehabilitation techniques to determine the preferred series of maintenance repair strategies timed to ensure optimum pavement performance for minimum costs; directing an annual analysis of the overall statewide highway network pavement condition to determine existing minimum funding needs and the total budget shortfall; and directing the development and implementation of a new pavement management system that conforms to Federal Highway Administration pavement policy.

Manage the functional responsibilities associated with value engineering by establishing proposed departmental policies and procedures for the Value Engineering Program; directing and approving the selection of candidate projects to undergo the formal value engineering process; directing the selection and development of value engineering teams; monitoring the teams' progress to ensure that all feasible study recommendations have been evaluated and that the most economical alternatives have been developed into a workable plan; directing the team to formalize and present their findings to management for review, evaluation and approval; and directing follow-up studies after construction of projects to determine and report the extent of value engineering recommendations implemented and to document savings. Plan, organize and direct cost allocation studies aimed at evaluating highway user fee structures to determine if highway users are contributing their fair share of costs for the design, construction, maintenance and operation of the State's highway network.

ROAD DESIGN DIVISION

Manage the operations and staff of design functions within the division that includes design squads, consultant administration, specifications, and traffic engineering.

Design: Administer the development of design projects by coordinating the assignments of all design projects with other division managers; establishing project priorities; assigning projects to designers; calculating preliminary engineering costs; reviewing preliminary construction estimates; monitoring the progress of designs to ensure project is on schedule and is being designed in accordance with Federal Highway Administration and department guidelines; reviewing plans for continuity of layout and constructability; reviewing unit prices on items of work for final estimates to maintain reasonable costs and budgets; negotiating and preparing legal agreements or supplemental agreements covering work with local entities on individual projects; developing special provisions for special items that may be required on individual projects; reviewing final draft of special provisions; reviewing all projects performed by assigned staff for certification of compliance with design standards; and certifying that roadway project plans and specifications are in conformance with standards.

Provide engineering and technical support for construction and maintenance by writing requests for change orders to existing contracts; reviewing contract change orders from other divisions; recommending solutions to contract problems as a result of design changes or unanticipated circumstances in the field; consulting with other divisions on problems that occur during construction; and representing the division at construction project meetings. Coordinate project activities by establishing project priority list; organizing, meeting and corresponding with other divisions, local, State and federal agencies to discuss and develop project information, resolve problems, and provide information to aid in prioritizing projects.

ROAD DESIGN DIVISION (cont'd)

Consultant Administration: Administer the consultant program for the division by formulating and updating consultant prequalification list used for consultant selection; developing a Request for Proposal package for each project designated to go to consultants; establishing cost estimates, project schedule, scope of work, and preliminary legal agreement for the project prior to conducting negotiations; implementing the contract; attending meetings during the project's progress to provide advice as to design standard and department policy; and, upon completion of the project, certifying to the design standards and evaluating the consultant's performance.

Coordinate highway projects to provide technical expertise in solving complex engineering problems and to schedule and facilitate project meetings as required to keep all divisions and agencies appraised of the project impact.

Hydraulic Section: Plan, organize, schedule and oversee the operations of the Hydraulics Section within the division; initiate requests for consultant engineer when needed; assign project to a consultant engineer by defining the scope of the project, identifying design criteria, methods and standards to be used and forwarding information to the consultant to ensure the project is completed according to department standards; and certify department roadway design projects for hydraulic acceptability in conformance with the Certification Acceptance Program and Federal Highway Administration policies.

Supervise and participate in the design of hydraulic systems; prepare and maintain the hydraulic section of the department Design Manual and Standard Plans; recommend approval or denial of encroachment permits affecting drainage within the department's rights of way; and provide technical expertise in the areas of hydrology and hydraulics.

Specifications: Perform administrative functions to include certifying that federal aid projects prepared by the Specifications Section are prepared in accordance with applicable standard specifications, policies and guidelines and enumerated in the Federal Aid Highway Program Manual and documents published by the department; manage Standard Specifications, Special Provisions, and Special Technical Specifications and research activities; maintain approved corrections and additions to the Standard Specification; prepare written modifications to the Special Provisions to ensure proper coverage of items of work; write specifications to cover new product descriptions, materials, construction methods, and method of measurement and payment; and send the written specification to other divisions for their review and comment.

Traffic Engineering: Review and evaluate traffic impact studies to ensure compliance with department guidelines; assess the findings and recommendations of each traffic impact study from the consultant engineer to determine if the proposed development meets department standards; coordinate with the department, local government entities and concerned parties to develop recommendations concerning the proposed development; and prepare recommendations to be given to the consultant engineer.

Review and update all traffic engineering standards used by the department and other agencies as needed.

SAFETY ENGINEERING DIVISION

Manage the operations and staff of the Statewide Safety Engineering Programs, the Railroad Safety Engineering Programs and the Safety Analysis Program; establish safety project work plans for each safety category; review project scope and costs with program coordinators to insure federal safety funds are spent on the most cost effective safety projects; assign work schedules; establish procedures and time frames for completing project engineering studies; and review and evaluate final project priority listings in order to make recommendations to the division administrator.

SAFETY ENGINEERING DIVISION (cont'd)

Coordinate safety programs by analyzing and preparing reports of traffic and safety engineering data for the department's legal division in tort liability suits; providing accident and safety statistics to the news media; preparing verbal or written reports to the Federal Highway Administration, departmental divisions and local governmental entities regarding revisions to procedures or policy changes in the Highway Safety Improvement Program; coordinating and participating in meetings concerning contract agreements, project justifications, conformance to policy and procedure or budgetary items and coordinating project costs by maintaining monthly files on project and division operating costs, initiating budget augmentation, adjustment memoranda and project billings.

STRUCTURAL DESIGN DIVISION

Manage the operations and staff of either the Bridge Design, the Bridge Inspection and Maintenance, or the Contract Administration/Technical Support sections within the division.

Bridge Design: Manage and direct the development of structural designs to include plans, specifications and estimates; develop structure related special provisions; review and approve unit prices for final estimates; and certify that all standards, specifications, codes regulations have been met in the design of projects, and provide technical leadership in complex design problems.

Provide technical support for construction of structural items; recommend solutions to structure related construction problems; request construction contract change orders to cover revisions to contracts when necessary; review contract change orders requested by other divisions and make recommendations based on the review; review construction shop drawings, erection drawings and falsework drawings for approval or rejection; conduct on site construction inspections; and represent the section at conferences required during the construction phase.

Bridge Inspection and Maintenance: Develop policies, procedures and programs concerned with bridge maintenance and inspection activities to comply with federal and State regulations and department goals and objectives; develop training materials and coding guides for uniformity in data coding and to provide reference materials for bridge inspectors; develop and implement training classes regarding all functions of the bridge inspection and maintenance program; and assist in the development and updating of the department's Bridge Manual.

Perform quality control activities to ensure the completeness of the inspection and maintenance data recorded on reports to determine if coding policies need revisions, evaluate the quality of data entry, and improve program quality.

Respond to reports of structural damage and/or damage prone structures by examining damaged structural elements and/or monitoring structures during critical events to evaluate damage, determine repair strategies, and preserve public safety. Evaluate requests for overload permits in coordination with Administrative Services.

Contract Administration/Technical Support: Administer the bridge design consultant contracts for the division to include preparing consultant requests for proposals; evaluating proposals and selecting consultants; negotiating and preparing consultant agreements; monitoring design efforts of consultants to ensure compliance to specifications; reviewing invoices; and handling contract disputes, appeals and terminations.

Direct technical support functions to include reviewing and recommending approval for new products; administering activities involved in experimental and research projects and special studies; and directing the development of computer programs for use by the division.

DISTRICTS

Plan, organize, direct and oversee all aspects of contract administration; direct changes to contract plans and specifications; prepare progress estimates and authorize payment to the contractor for work completed in conformance with plans and specifications; monitor contractor's work force wage rates through review of certified payrolls to ensure compliance with federal and State wage and salary regulations; and monitor the Disadvantaged Business Enterprise (DBE) Program to ensure contractor's compliance with equal opportunity and apprenticeship goals.

Maintain communication with contractor's supervisory personnel, staff personnel, district personnel, and other division staff members in order to coordinate and schedule activities, address technical problem areas on the jobsite, identify job assignments and responsibilities, provide updates on project status and exchange information relating to project details.

Promote project safety by reviewing and modifying traffic control plans to ensure conformance with the appropriate standards; enforce contractor's adherence to established traffic control plans through direct and delegated supervision of placement and maintenance of traffic control devices; ensure employees are trained to recognize and handle hazardous materials; and initiate and coordinate emergency response to job site accidents and/or hazards.

Determine when the contractor has completed contractual requirements in substantial compliance with contract plans and specifications and requests final acceptance; prepare final estimate of quantities and materials so final payment can be made; research and prepare documentation to support the department's position on claims filed against the contract; and help represent the department at the Claims Review Board and testify in a court of law when necessary.

Review preliminary plans and specifications to recommend improvements or note corrections and participate in project field reviews prior to design and during or after construction to recommend improvements to the design and construction processes.

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MINIMUM QUALIFICATIONS

SPECIAL NOTES AND REQUIREMENTS:

* Positions within this class may require specialized education and experience which will be identified at the time of recruitment.
* Any person appointed to this class on or after July 1, 1995, must be registered as a Professional Engineer in the State of Nevada, unless that person is a registered Professional Engineer in another state; in that case, that person must become registered as a Professional Engineer in Nevada within six months of appointment as a condition of employment.
* Employees in this class who are not registered professional engineers may not represent themselves as such to other persons or entities.

EDUCATION AND EXPERIENCE: Bachelor's degree from an accredited college or university in civil engineering or closely related engineering field and six years of progressively responsible professional engineering experience of which two years must have been in a supervisory or responsible project charge capacity; **OR** two years of experience comparable to the Supervisor III, Associate Engineer or Staff III, Registered Professional Engineer; **OR** one year of experience comparable to the Supervisor IV, Registered Professional Engineer. *(See Special Notes and Requirements)*

MINIMUM QUALIFICATIONS (cont'd)

ENTRY LEVEL KNOWLEDGE, SKILLS AND ABILITIES (required at time of application):

ALL OPTIONS

Working knowledge of: mathematics, algebra, geometry, trigonometry and statistics to perform daily calculations and work tasks. **General knowledge of:** federal and State affirmative action and equal employment opportunity laws and regulations applicable to public institutions sufficient to analyze proposed personnel policies and procedures. **Knowledge of:** engineering principles and practices; principles of organization and management in an engineering environment. **Ability to:** communicate orally using appropriate vocabulary and grammar to obtain and provide information and explain policies and procedures to persons of varying levels of engineering expertise; analyze information, technical data, problems, situations, practices or procedures to define the problem or objective, identify relevant concerns or factors, identify patterns, tendencies and relationships and recognize alternatives and their implications; work independently and follow through on assignments with minimal direction and/or supervision; write grammatically correct, concise and logical business correspondence and reports to complete assigned duties; supervise and direct the work of engineers, sub-professional and skilled employees; work as part of a team; complete heavy workload within established time frames; perform under the stress of frequent interruptions and/or distractions; speak on a one-to-one basis to obtain information, explain policies and procedures, and persuade others to accept or adopt a specific opinion or action; write concise, logical, grammatically correct analytical reports to explain procedures, policies and present information; review and comment constructively on the work of staff personnel. **Skill in:** personnel management in order to obtain work willingly from persons performing the work; recognize the use of good engineering principles and practices.

MATERIALS AND TESTING DIVISION

All Branches - Detailed knowledge of: engineering properties of construction materials, engineering principles, practices and theory and terminology related to highway construction. **Working knowledge of:** new products and methods. **General knowledge of:** uses and capabilities of new products.

OPERATIONS ANALYSIS DIVISION

Working knowledge of: principles and practices in civil engineering related to the planning, design, construction and maintenance of highway facilities.

ROADWAY DESIGN DIVISION

Design - Detailed knowledge of: principles of engineering drafting including nomenclature, methods, conventional symbols and sources of information. **Working knowledge of:** other department divisions' organizations and their needs for their phase of the project; the correct legal form and substance to formulate concise and accurate legal documents and agreements. **General knowledge of:** construction procedures and methods. **Ability to:** perform particular phases of engineering work such as highway capacity calculations and geometric designs of roadways.

Consultant Administration - Ability to: perform difficult technical research and formulate comprehensive recommendations regarding engineering problems.

Hydraulics Section - Knowledge of: the principles of engineering, in particular knowledge of hydrology, fluid mechanics, open channel hydraulics, properties of soils, construction materials, surveying, highway design, and river mechanics. **Ability to:** prepare engineering drawings of drainage designs.

Specifications - Ability to: read specification and related documents prepared by others and check for completeness and content; explain to the specification writer the source and need for revisions to the documents; read letters and memos requesting revisions to the standard specifications; tactfully recommend changes to specification writer's material; write letters and memos in response to specification requests.

MINIMUM QUALIFICATIONS (cont'd)

ENTRY LEVEL KNOWLEDGE, SKILLS AND ABILITIES (required at time of application):

ROADWAY DESIGN DIVISION (cont'd)

Traffic Engineering - Working knowledge of: federal and State guidelines pertaining to signs, pavement marking, traffic control, traffic signals and lighting; geometric design policies and practices. **Ability to:** write concise, logical, grammatically correct letters and reports to explain the department's traffic engineering policies and procedures to consultants, concerned citizens and other department personnel; write technical reports on experimental products concerning traffic engineering.

SAFETY ENGINEERING DIVISION

Detailed knowledge of: highway capacity methodology and terminology. **Working knowledge of:** roadway and traffic control design principles; traffic control systems and operations. **Knowledge of:** Nevada Geographic Roadway Network system and functional classification of federal and State routes. **Ability to:** interpret contract plans, specifications, and construction estimates.

STRUCTURAL DESIGN DIVISION

Bridge Design and Contract Administration/Technical Support - Detailed knowledge of: principles of engineering drafting including nomenclature, methods, conventional symbols and sources of information; up-to-date structural analysis and design methods and their applications; civil and structural engineering terminology; basic principles of physics and engineering mechanics and their application to structural analysis and design; physical properties of construction materials related to structures. **Working knowledge of:** manuals, policies, procedures and guidelines used by the division; the department's Standard Plans for Road and Bridge Construction; construction procedures and methods as related to transportation structures. **General knowledge of:** provisions of the Federal Highway Administration's Manual on Uniform Traffic Control Devices; data processing and its application to structural analysis and design; chemistry and metallurgy related to engineering materials; federal, State and local environmental standards and regulations with attention to their affect on project and facilities; roadway design, hydraulic design and right-of-way requirements. **Ability to:** make decisions based on technical information that affects the economy, safety, and aesthetics of transportation structures; apply knowledge of structural analysis and design methods properly during the course of design and construction projects; review and critique subordinates' design calculations and drawings; inspect construction projects in progress and determine if the work is in compliance to the requirements set forth in the plans, specifications and standards; inspect existing structures and determine the needs for maintenance and repair; modify and adapt standard design procedures or methods to fit unusual conditions encountered; interpret the meaning and intent of specifications, codes and regulations.

Bridge Inspection and Maintenance - Detailed knowledge of: the data requirements of the Bridge Inspection/Maintenance Program and the National Bridge Inventory; bridge inspection principles and techniques; principles of physics and engineering mechanics and their application to structural analysis and design; the physical and chemical properties of construction materials used in bridges. **Working knowledge of:** federal laws pertaining to bridge inspection/maintenance programs and the national bridge inventory; Federal Highway Administration's policies with regard to bridge inspection/maintenance programs and bridge maintenance management systems; bridge design and construction procedures and terminology. **General knowledge of:** specifications for bridges; the manuals, policies, procedures and guidelines used by the division; environmental standards and regulations.

DISTRICTS

Detailed knowledge of: engineering principles and practices as applied to highway construction to include supervision, contract administration, communications, safety, surveying, testing, inspection and field office procedures. **Knowledge of:** federal and State affirmative action and equal employment opportunity laws and regulations applicable to both the department's and contractors' employees. **Ability to:** read and evaluate complex critical path method project schedules; interpret contract plans and special provisions; read and

MINIMUM QUALIFICATIONS (cont'd)

ENTRY LEVEL KNOWLEDGE, SKILLS AND ABILITIES (cont'd)

DISTRICTS (cont'd)
comprehend technical information, manuals and legal documents as they pertain to highway engineering; compose letters and memos to contractors, district office, and construction office, other division, other agencies and entities, and the public; compose and write contract change orders with clarity and accuracy and within guidelines established by the department; read, comprehend and comply with memoranda; keep a comprehensive daily diary using proper technical and descriptive terms to document facts and project status; review inspector reports, test reports, and other field documentation to effectively monitor the progress of the project; discuss a variety of job-related topics with the contractors on short or no notice; maintain a professional relationship with the contractor while obtaining the goals and objectives of the department; negotiate with the contractor changes in work that occur during the course of the project and negotiate an agreement acceptable to all parties while avoiding a claim situation; read and comprehend Materials Safety Data Sheets on all materials used in highway construction; review and modify complex traffic control plans in accordance with the appropriate standards. **Ability and willingness to:** travel extensively and to work long and irregular hours.

FULL PERFORMANCE KNOWLEDGE, SKILLS AND ABILITIES (typically acquired on the job):

ALL OPTIONS
Knowledge of: where to go within the organization for needed information; what other divisions' functions and capabilities are to judge what information should be passed on to different levels of management; educational needs of subordinates and sources of training. **Ability to:** adapt to changes in workload and adjust priorities quickly as circumstances dictate; perform a variety of duties, often changing from one task to another of a different nature; set priorities which accurately reflect the relative importance of the job responsibilities; negotiate, exchange ideas, information and opinions with others to formulate policies and programs and/or arrive jointly at decisions, conclusions or solutions; establish and maintain effective working relationships with other employees and management to complete tasks quickly and with as few inconveniences as possible; manage and allocate space, equipment and material resources including developing utilization plans and justifying acquisitions; inspire employees to produce an accurate and timely product; organize and compose instructions and policy procedural statements for the operation of the section; assimilate historical data and project future needs to determine future budgetary requirements based on projected workloads; interpret and enforce divisional policies and rules; discuss and present a variety of engineering related topics on short or no notice with various public agencies and groups or with management and staff. **Skill in:** financial analysis, planning, preparation and administration of a budget.

MAINTENANCE DIVISION
Working knowledge of: the Maintenance Management System; the Maintenance Training Program; maintenance equipment, materials and procedures.

MATERIALS AND TESTING DIVISION

Bituminous Branch - Ability to: perceive and define cause and effect relationships in pavement performance, constructability and specifications; analyze complex technical data such as the Pavement Management System pavement condition data and the National Weather Service environmental data; modify lime, cement-treated base and bituminous mix designs, procedures or methods to current standards.

Geotechnical Branch - Detailed knowledge of: accepted geotechnical practices and procedures, lab testing methods for soils, field testing and sampling procedures, construction procedures, department policies and procedures and report writing; equipment capabilities and purpose, sampling and testing procedures and equipment cost; department consultant hiring procedures and practices, writing requests for proposals, costs of project proposed for consultant and end results expected from consultant; department's equipment capabilities; soil behavior under adverse conditions, construction procedures

MINIMUM QUALIFICATIONS (cont'd)

FULL PERFORMANCE KNOWLEDGE, SKILLS AND ABILITIES (cont'd)

MATERIALS AND TESTING DIVISION

Geotechnical Branch (cont'd)
related to geotechnical aspects, and accepted soil parameters needed for corrective action. **Working knowledge of:** testing and sampling equipment. **Knowledge of:** which consultants are capable of undertaking project, of negotiating procedures and techniques. **Ability to:** recognize equipment best suited to accomplish a specific task and to compare cost versus need; interview consultants and judge their qualifications, conceive and present information on scope of project, negotiate a fair settlement to obtain the best product for the most reasonable cost, and review consultants' work and progress.

Pavement Design Branch - Ability to: perceive and define cause and effect relationships in Pavement Management and Pavement Design; analyze complex technical data such as the Pavement Management Survey data and Radiological Safety using logic and quantitative reasoning; modify and/or adapt pavement designs, procedures or methods to current standards.

Structural/Chemical Branch - Ability to: modify and/or adapt concrete mix designs, procedures or methods to current standards.

All Branches - Ability to: compare materials used in highway construction and judge whether they are similar to or significantly different from prescribed standards.

OPERATIONS ANALYSIS DIVISION

Working knowledge of: principles of modern transportation system and methods design and operation.

ROAD DESIGN DIVISION

Design - Detailed knowledge of: the physical priorities of construction materials related to roadway items. **Working knowledge of:** various federal, State and department manuals, handbooks and guidelines relative to transportation engineering. **General knowledge of:** data processing and its application to design and use of personal computers; federal, State and local environmental standards and regulations with attention to their affect on department projects and facilities. **Ability to:** write and supervise the writing of standard and special specifications; modify or adapt standard design procedures to fit atypical circumstances while maintaining economic constraints, continuity, quality, safety and schedules.

Consultant Administration - Working knowledge of: current principles and standards of civil engineering with reference to highway design. **Ability to:** plan, organize and direct employees, consultants, and associates engaged in a variety of work.

Hydraulics Section - Working knowledge of: State and federal policies and guidelines for highway drainage; State, federal, and city/county floodplain management regulations; construction materials related to highway drainage products. **General knowledge of:** highway construction practices, roadway design and highway maintenance practices. **Ability to:** assess the need for additional resources such as consulting engineers to maintain project schedules; compare/inspect engineering drawings and technical reports to determine whether they are similar to or different from prescribed standards; read, understand and apply information found in technical documents such as hydraulic design manuals; evaluate impacts, beneficial or adverse, to existing drainage patterns caused by roadway projects; exercise use of engineering judgment in hydraulic or hydrologic design when faced with minimal information and the need to produce results; adapt design work to changing conditions; recognize possible legal ramifications of changing existing drainage patterns; design, evaluate and select a preferred design from several alternatives.

MINIMUM QUALIFICATIONS (cont'd)

FULL PERFORMANCE KNOWLEDGE, SKILLS AND ABILITIES (cont'd)

ROAD DESIGN DIVISION (cont'd)

Specifications - Working knowledge of: policies related to plans and specifications so that decisions are consistent, acceptable and workable; various specifications which are current or previously acceptable; standard specifications and other appropriate manuals on engineering specifications. **General knowledge of:** old contract special provisions and similar work on other projects; Nevada's Certification Plan and related specification preparation for projects. **Ability to:** interpret plans and specifications to determine adequacy of written descriptions; read technical special provision to determine their completeness in describing the item of work; write general and technical specifications and correction explanations to plans and special provisions; analyze the requests for supplemental notices and process as deemed necessary; analyze proposed construction methods and identify potential problems; write technical specifications based on product material and construction requirements; refer inquirers to proper department if questions or request is outside the jurisdiction of the specifications section; analyze material and construction information for the estimate of production rates.

SAFETY ENGINEERING DIVISION

Knowledge of: Federal Highway Program manuals, Highway Safety Improvement Program, and the American Association of State Highway Officials Policy of Geometric Design of Highways and Streets; railroad design principles, policy and procedures.

STRUCTURAL DESIGN DIVISION

Bridge Design and Contract Administration/Technical Support - Working knowledge of: federal highway policy memoranda that apply to design and construction of structures; the department's research administrative procedure guide. **General knowledge of:** the Uniform Building Code and local building codes as they affect projects. **Ability to:** write legal agreements for cooperative projects for governmental and private entities, consultant services and research projects; compare/inspect proposals from contractor, consultants, material suppliers, and researchers and judge whether they are similar to or different from prescribed standards.

Bridge Inspection and Maintenance - Detailed knowledge of: the Federal Highway Administration's goals and objectives pertaining to bridge inspection/maintenance programs and bridge maintenance management; department goals and objectives pertaining to bridge inspection and bridge maintenance management; monetary needs of the bridge inspection program. **Working knowledge of:** all bridges in Nevada including, but not limited to, knowledge of owners, locations, construction types and load limits; research and development in the field of bridge inspection and bridge maintenance management.

DISTRICTS

Working knowledge of: personal computers and software packages utilized in field office procedures. **Ability to:** obtain certification in work zone traffic control supervision from the American Traffic Safety Services Association.

This class specification is used for classification, recruitment and examination purposes. It is not to be considered a substitute for work performance standards for positions assigned to this class.

6.224

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8/31/92PC
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